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PRODUCTION OF RARE EARTH PHOSPHATE

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Abstract

PURPOSE: To reduce production cost and to improve the characteristics of powder and to enhance the characteristics of fluorescence and emission by atomizing and drying slurry contg. either rare earth phosphate or the same added with an activator and spherizing this dried substance.

CONSTITUTION: Rare earth oxide and carbonate corresponding to a required rare earth element are dissolved by a mineral acid (e.g. nitric acid) to produce an acid salt aq. soln. mixed with the rare earth element having 0.01-1mol/l concn. A soln. contg. a phosphate and phosphate ions is made to react with this acid salt aq. soln. in an acidic region of $\text{pH} \leq 5$ to obtain the ppt. of the rare earth hydrated phosphate which has 0.01-30wt.% concn. of solid, 0.1-40 μm particle size of crystal with 5 μm mean particle size. Then, after this pptd. is washed with water, an activated substance (e.g. SiO_2) is mixed in a shape of powder or an aq. soln. The obtained slurry is atomized and dried to obtain the rare earth phosphate of 0.5-100 μm mean particle diameter. Furthermore, a green luminous fluorescent substance constituted of the rare earth phosphate as a main component is obtained by burning the rare earth phosphate at about 1200 deg.C in the weak reductive atmosphere.

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